



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

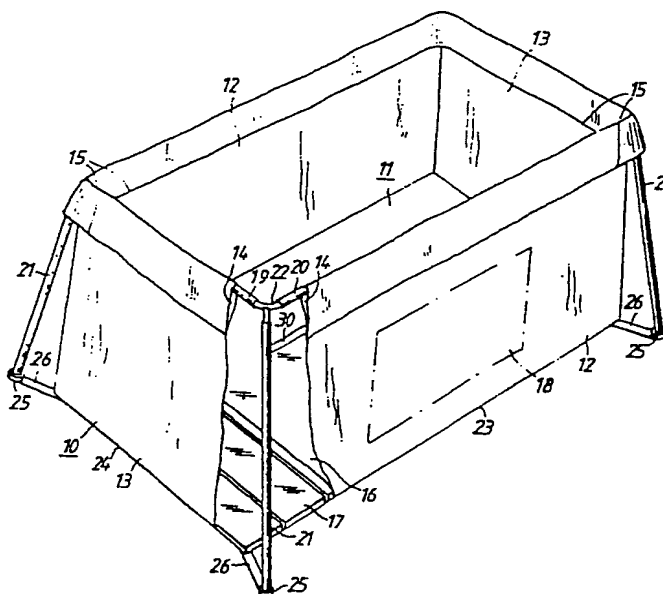
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<p>(21) International Application Number: PCT/SE91/00520</p> <p>(22) International Filing Date: 5 August 1991 (05.08.91)</p> <p>(30) Priority data: 9002611-3 9 August 1990 (09.08.90) SE 9004041-1 18 December 1990 (18.12.90) SE</p> <p>(71) Applicant (for all designated States except US): BABY BJÖRN AKTIEBOLAG [SE/SE]; PO Box 93, S-182 71 Stocksund (SE).</p> <p>(72) Inventor; and (75) Inventor/Applicant (for US only): BERGKVIST, Håkan [SE/SE]; Beckombergavägen 72, S-161 53 Bromma (SE).</p> <p>(74) Agents: NILSSON, Karl et al.; Stenhagen Patentbyrå AB, P O Box 17709, S-118 93 Stockholm (SE).</p>	<p>(81) Designated States: AT (European patent), AU, BE (European patent), CA, CH (European patent), DE (European patent), DK (European patent), ES (European patent), FI, FR (European patent), GB (European patent), GR (European patent), IT (European patent), JP, LU (European patent), NL (European patent), NO, SE (European patent), US.</p> <p>Published With international search report.</p>	

(54) Title: A CHILD'S BED

(57) Abstract

A child's bed comprising a bed unit which can be collapsed to a form which requires only a small storage space and which comprises a bed bottom (11), side walls and end walls (12, 13) made of pliable material, and a demountable stand (19-22). The stand includes a support frame (19, 20, 22) which supports the bed unit adjacent the upper edges of the side walls and end walls (12, 13) and four legs (21), each of which is positioned in respective corners of the bed and which support the support frame. When the bed is erected for use, each of the legs (21) is inclined obliquely

downwards and outwards to an extent such that the bottom end of respective legs is located at a distance outside the adjacent side (23) of the bed bottom. The bottom end of the leg is received in a fitting (25) which is connected to the bed bottom (11) through the intermediary of a tearproof connector (26). The upper ends of the frame legs are removably connected to the support frame (19, 20, 22) in a position in which the bottom ends of the legs are located slightly further away from the bed bottom than their associated fittings. The bottom ends of the legs are intended to be sprung in towards the bed bottom (11) in order to be brought into engagement with the fittings (25).



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⁺ It is not yet known for which States of the former Soviet Union any designation of the Soviet Union has effect.

A CHILD'S BED

The present invention relates to a child's bed of the kind which includes a bed unit comprising an at least substantially rectangular bed bottom and side walls and end walls which are made of a soft, pliable material and which are mutually joined at adjacent ends thereof, said side walls and said end walls extending upwardly from respective sides and ends of the bed-bottom when the bed is erected to its in-use state, and further includes a demountable stand which comprises an at least substantially rectangular support frame which is carried by four legs and which includes frame side-members which, for the purpose of supporting the bed unit, when the bed is erected for use, are intended to be accommodated in channels formed in the side and end walls adjacent the upper edges thereof, said support frame being capable of being devided and removed from the legs at the frame corners, wherein the bed unit, with the stand demounted, can be collapsed to a form in which it requires only a small storage space. One such bed is known, for instance, from SE-B-319. 272 and is primarily intended for use as a so-called travel bed or "stay-over-night-bed" for instance, and which should therefore be readily assembled and dismantled and have low weight, so as to enable the bed to be readily transported between different places of use and readily erected at such places.

An object of the present invention is to provide a novel and improved bed construction which is simpler than the construction of known beds of the aforesaid kind and which enables the weight of the bed to be reduced and its stability increased.

To this end, the inventive bed has the characteristic features set forth in the characterizing clause of Claim 1. When the bed is erected for use, the stand legs advantageously slope obliquely downwards and outwards from the support frame in a manner such that the bottom ends of respective legs will also be located at a distance outwardly of the adjacent bottom end of the bed. As a result of the oblique positioning of the legs, as proposed in accordance with the invention, and the manner in which the bottom ends of said legs are connected to the bed bottom through the intermediary of connecting members, additional security against unintentional tipping of the bed is obtained at the same time as the risk that a child who uses the bed will be injured by contact with the stand legs is reduced. Furthermore, the proposed connection between the legs and the bed bottom obviates the need for rods, bars or the like accommodated in channels which extend along the sides of the bed-bottom and the ends of which are connected to stand legs at opposite end-walls of the bed.

Further features of the invention and advantages afforded thereby are set forth respectively in the depending Claims and in the following description of an exemplifying embodiment of the invention illustrated in the accompanying drawings, in which

- Figure 1 is a perspective view of an inventive child's bed, with parts of a bed unit being cut away adjacent one end-wall of the bed;
- Figure 2 is an end view of the bed illustrated in Figure 1;
- Figure 3 is a perspective view of one corner region of a demountable stand provided with a

modified connecting member, said Figure also showing legs and frame side-members separated from the connecting member;

5 Figure 4 is a perspective view of a modified stand with the legs separated from the connecting members at the corner regions of the support frame;

Figure 5 is a perspective view of a modified stand-support frame; and

10 Figure 6 is an axial sectioned view of a centre part of the longitudinally extending side-members of the frame illustrated in Figure 5.

15 Mutually similar, or essentially similar, components illustrated in the various Figures have been identified by the same reference signs. The drawings illustrate a bed unit, generally referenced 10, which includes a substantially rectangular bed bottom 11 and side walls 12 and end walls 13 which are made of a soft pliable material and which extend upwardly from the sides and ends of the bed bottom, said walls 12, 13 being mutually connected at adjacent ends. The side walls and end walls are folded over along their upper edges, to form channels or pockets 14 which preferably extend continuously around the upper edge of the bed unit, the bottom of said channels being formed, for instance, by a sewn seam 15 and being open in the corner regions of the bed unit. The bed bottom 11 suitably comprises an upper and a lower bottom-layer of soft pliable material, of which the upper layer is referenced 16 in Figure 1, and a stiffening insert 17 located between said layers and being substantially rigid in one direction and bendable in the opposite direction, so that the entire bed unit 10 can be collapsed, for instance rolled-up to a shape which requires only a small stor-

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age space. In the case of the Figure 1 embodiment, the insert 17 has the form of strips, for instance hard wood-fibre strips, which extend transversely to the longitudinal axis of the bed. The strips may be mutually joined by means of transversely extending bendable bands for instance, or each strip may be separate from the others and accommodated in a respective pocket formed by mutually joining the upper and lower bed-bottom layers along the mutually opposite long sides of the strips. The walls 12, 13 and the upper and lower layers of the bed bottom 11 may be made of fabric material and, when the insert 17 is such as to enable it to be withdrawn from between the layers, the bed can be washed. Parts of the wall 12, 13 may be transparent. By way of example, a window made, for instance, of net-like material is shown in chain lines at 18 in Figure 1.

The bed unit 10 is supported in its illustrated erected state by a demountable stand which comprises a substantially rectangular support frame which includes transversely and longitudinally extending frame side-members 19, 20 received in the channels 14 of the bed unit and supported by four stand legs 21. The frame side-members 19, 20 are detachably connected to each other and to the legs 21 by means of connecting members 22 arranged in the corner regions of the support frame.

The connecting members 22 are configured so that when the stand is erected to its state of use, the stand legs 21 will slope obliquely outwards and downwards to an extent such that the bottom ends of respective legs will be located at a distance outside the adjacent side 23 of the bed bottom and suitably also outside the adjacent end 24 of the bed bottom, as clearly shown in

Figures 1 and 2. In this case, the bottom ends of respective legs are received in a socket or fitting 25 which is connected to the bed bottom 11 via a tearproof connecting piece or connecting band 26. As will be seen from Figure 2, the length of the legs may be chosen so that the bed bottom 11 will be located slightly above the bed-supporting surface 28 when the bed is free of load, but which will rest against said bed-supporting surface when the bed is subjected to load, i.e. when a child is placed in the bed. Figure 2 shows a mattress 27 placed on the bed bottom 11. The angle α (Figure 2) at which the legs 21 are inclined to the side walls 12 and possibly also to the end walls 13 may advantageously be from 5-25°, suitably 7-17°, when the bed is erected for use and the connecting pieces 26 are extended. An advantageous is gained when the connecting members 22 are constructed so as to incline the legs 21 at a somewhat larger angle, so that the bottom ends of respective legs must be forced or sprung inwards towards the bed bottom 11 in order to be brought into engagement with an associated fitting. This results in a highly stable bed.

Figure 4 illustrates the stand in its entirety and it will be seen that the legs 21 and frame side-members 20 are tubular members, and that the legs 21 and the members 20 may be identical to one another. The frame members 19 have the form of rods. Each frame side-member 19 and connecting member 22 located at the ends of said frame side-members are formed integrally with one another. More specifically, the ends are bent so that they can be inserted into the adjacent ends of the side-members 20 and have mounted thereon, for instance by welding, obliquely downwardly and outwardly extending pegs 29 which are intended to be received in the

upper ends of the tubular legs 21. A good fit between the connecting members 22 and the legs and frame side-members is advantageous. In order to prevent the frame side-members 20 from being unintentionally separated from the connecting members 22, fastener means may be provided between said connecting members and side-members, for instance a screw which coacts with a screw threaded hole provided in the side-member 20, such that the end of said screw can be urged against the bent end of the connector 22 received in the side-member 20 or inserted into a hole provided in said bent end. An advantage is gained, however, when the legs are connected together in pairs by means of a soft, bendable, tearproof connecting element 30 whose length is so adapted that when the bed is erected for use, said element is stretched and extends parallel with an associated frame side-member 20. In the embodiments illustrated in Figures 1 and 4, the connecting element 30 has the form of a band, whereas in the Figure 3 embodiment, said element has the form of a cord received in the same channel 14 as the associated frame side-member 20 in the manner illustrated in Figure 1.

In the case of the embodiment illustrated in Figures 1 and 3, the frame side-members 19 are also tubular, wherein the connector 22 in Figure 1 is provided with pegs which are intended to be received in the adjacent ends of the tubular legs 21 and the frame side-members 19, 20, whereas in the Figure 3 embodiment, the connector 22 is provided with socket-like arms or fittings which receive the adjacent ends of the legs 21 and the frame side-members 19, 20. In the Figure 1 embodiment, the connecting members 22 are assumed to be fixedly connected to the frame side-members 19 at the end walls of the bed. Similarly, the connector 22 in Figure 3 is

assumed to be fixedly connected to the frame side-member 19.

5 In order to keep down the length of the frame side-members 20 extending in the longitudinal direction of the bed, for instance so that the side-members need not be made longer than the legs 21, the extension of the support frame 19, 20, 22 in the longitudinal direction of the bed may be made smaller than the length of the
10 bed bottom 11.

In the case of the modified support frame 19, 20, 22, 29, illustrated in Figure 5, the longitudinally extending frame side-members 20 consist of two mutually
15 detachable and mutually connectable parts 31, 32 which, in turn, are rigidly connected to associated frame end-members 19. More particularly, the illustrated arrangement is such that the frame-halves 19, 22, 29, 31, 32 obtained by separating the frame side-members 20 are
20 mutually identical, wherein the free end-part of each part 32 has a reduced diameter and is intended to be received in the free end-part of an associated part 31 of the other frame-half, as clearly shown in Figure 6. For the purpose of detachably connecting the parts
25 31, 32 together, each part 32 has mounted therein a spring device 33 which strives to hold a peg 34 in a position in which said peg will project radially through a hole 35 provided in the part 32 and, for the purpose of locking the parts 31, 32 together, can be
30 received in a hole 36 provided in the part 31. The parts can be separated from one another, by manually depressing the peg 34, thereby enabling the parts 31, 32 to be drawn apart. In order to provide access to the locking pegs 34, the bottom 15 of the channels 14 is
35 preferably also open in the centre region of the side-

walls 12. In the case of the arrangement illustrated in Figures 5 and 6, the bed bottom 11 is suitably foldable at a single location substantially midway between its ends.

5 Subsequent to removing the legs 21, this enables the bed to be collapsed by mutually disconnecting the frame-halves 19, 22, 29, 31, 32 while leaving said frame-halves in the channels 14. The frame-halves and the side-walls and end-walls of the bed unit 10 are
10 then lowered onto the bed bottom 11, which is then folded around its centre to form a flat package which requires only a small storage space. The disconnected legs 21 can be placed between the folded parts of the bed and the entire package can be placed, for instance,
15 in a cloth carrier bag designed for this purpose.

The invention is not restricted to the described and illustrated embodiments, but can be realized in any desired manner within the scope of the inventive concept defined in the Claims. For example, the upper
20 layer 16 of the bed bottom may be arranged to cover only the outer end-parts of the stiffening, transversely extending inserts or strips 17, which in other respects are covered by the mattress 27. These trans-
25 verse strips effectively prevent unintentional tipping of the bed. The panels forming the side-walls, the end-walls and the bottom of the bed unit 10 may be made of a fabric material and an advantage is gained when all of the panels have a rectangular shape so as to facilitate automated joining of said panels. Finally, those
30 parts of the fittings 25 which extend beneath the bottom ends of the legs 21 may form not-unconsiderable extensions of the legs 21 so that the length of said legs can be restricted to a value which is at most
35 equal to the width of the bed bottom 11.

C L A I M S

1. A child's bed which includes a bed unit (10) comprising an at least substantially rectangular bed
5 bottom (11) and side walls and end walls (12, 13) which are made of a soft, pliable material and which are mutually joined at adjacent ends thereof, said side walls and said end walls extending upwardly from res-
10 pective sides and ends of the bed-bottom when the bed is erected to its in-use state, and further includes a demountable stand which comprises an at least substan-
tially rectangular support frame (19, 20, 22) which is carried by four legs (21) and which includes frame
15 side-members (19, 20) which, for the purpose of supporting the bed unit (10), when the bed is erected for use, are intended to be accommodated in channels (14) formed in the side and end walls (12, 13) adjacent the
upper edges thereof, said support frame (19, 20, 22) being capable of being devided and removed from the
20 legs (21) at the frame corners, wherein the bed unit (10), with the stand demounted, can be collapsed to a form in which it requires only a small storage space
c h a r a c t e r i z e d in that when the bed is erected for use, the stand legs (21) slope obliquely
25 downwardly and outwardly, in a known manner, to an extent such that the bottom-end of a respective leg will be located at a distance outside the adjacent side
(23) of the bed bottom, in that the bottom end of the leg is received in a fitting (25) which is connected to
30 the bed bottom (11) through the intermediary of a tearproof connecting member (26); and in that the upper ends of the stand legs (21) can be detachably connected to the support frame (19, 20, 22) in a position in
which the bottom ends of said legs are located slightly
35 further from the bed bottom (11) than their associated

fittings (25), such that each of the bottom ends of said legs must be sprung inwards towards the bed bottom in order to bring said legs into engagement with associated fittings (25).

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2. A child's bed according to Claim 1, c h a r a c -
t e r i z e d in that when the bed is erected for use,
each of the stand legs (21) will slope obliquely down-
wardly and outwardly from the support frame (10, 20,
10 22) in a manner such that the bottom ends of respective
legs are also located at a distance outside the ad-
jacent end (24) of the said bottom.

3. A child's bed according to Claim 1 or 2,
15 c h a r a c t e r i z e d in that the length of the
bed bottom (11) is greater than the extension of the
support frame (19, 20, 22) in the longitudinal direc-
tion of the bed.

20 4. A child's bed according to any one of Claims 1-3,
c h a r a c t e r i z e d in that two mutually op-
posite frame side-members (19; 20), for instance the
side-members located at the end-walls of the bed, are
firmly connected at each end to a connecting member
25 (22), or are formed with a connecting member (22)
having fittings intended for detachable connection with
the upper end of a stand leg (21) and with the adjacent
end of another frame side-member (20; 19).

30 5. A child's bed according to Claim 4, c h a r -
a c t e r i z e d in that the stand legs (21) are
mutually connected in pairs at a small distance from
the upper end by means of a soft, bendable, tearproof
connecting element (30); and in that the connecting
35 element is arranged such that when the bed is erected

for use, said element will extend parallel with the detachable frame side-members (20) connected by the connecting members (22), such as to prevent unintentional separation of the stand legs (21) from the connecting members (22).

6. A child's bed according to Claim 5, characterized in that when the bed is erected for use, the connecting elements (30) are also accommodated in the channels (14) provided in the side-walls and end-walls (12, 13) of the bed unit (10).

7. A child's bed according to any one of Claims 1-6, characterized in that the frame side-members (19, 20) and the legs (21) can be fitted to the corners of the support frame with the aid of connecting members (22) that are provided with socket-like fittings, into which end parts of the legs (21) and the frame side-members (19, 20) can be inserted.

8. A child's bed according to any one of Claims 1-7, characterized in that the bed bottom (11) has compartments for receiving an insert means (17) which stiffens the bottom in the cross direction of the bed but which enable the bed bottom to be folded in the opposite direction at one or several locations along the length of said bottom.

9. A child's bed according to Claim 8, characterized in that the bed bottom (11) is provided with a plurality of stiffening inserts (17); and in that when the stand is demounted, the bed unit can be brought to a more compact state, by rolling-up said unit.

10. A child's bed according to Claim 8, c h a r -
a c t e r i z e d in that the bed bottom (11) can be
folded at a location essentially midway between its
ends; and in that the support frame can be devided in
5 the midway region of the longitudinally extending frame
side-members (19, 20).

11. A child's bed according to any one of Claims 1-10,
c h a r a c t e r i z e d in that the channels (14)
10 extend continuously around the bed unit (10), along the
upper edge of the side-walls and end-walls
(12, 13); and in that the bottom (15) of the channels
(14) is open in the corner regions of the bed unit and,
optionally, also in the centre region of the side walls
15 (12) such as to permit the frame-side pieces (19, 20)
to be inserted into respective channels.

Fig. 1

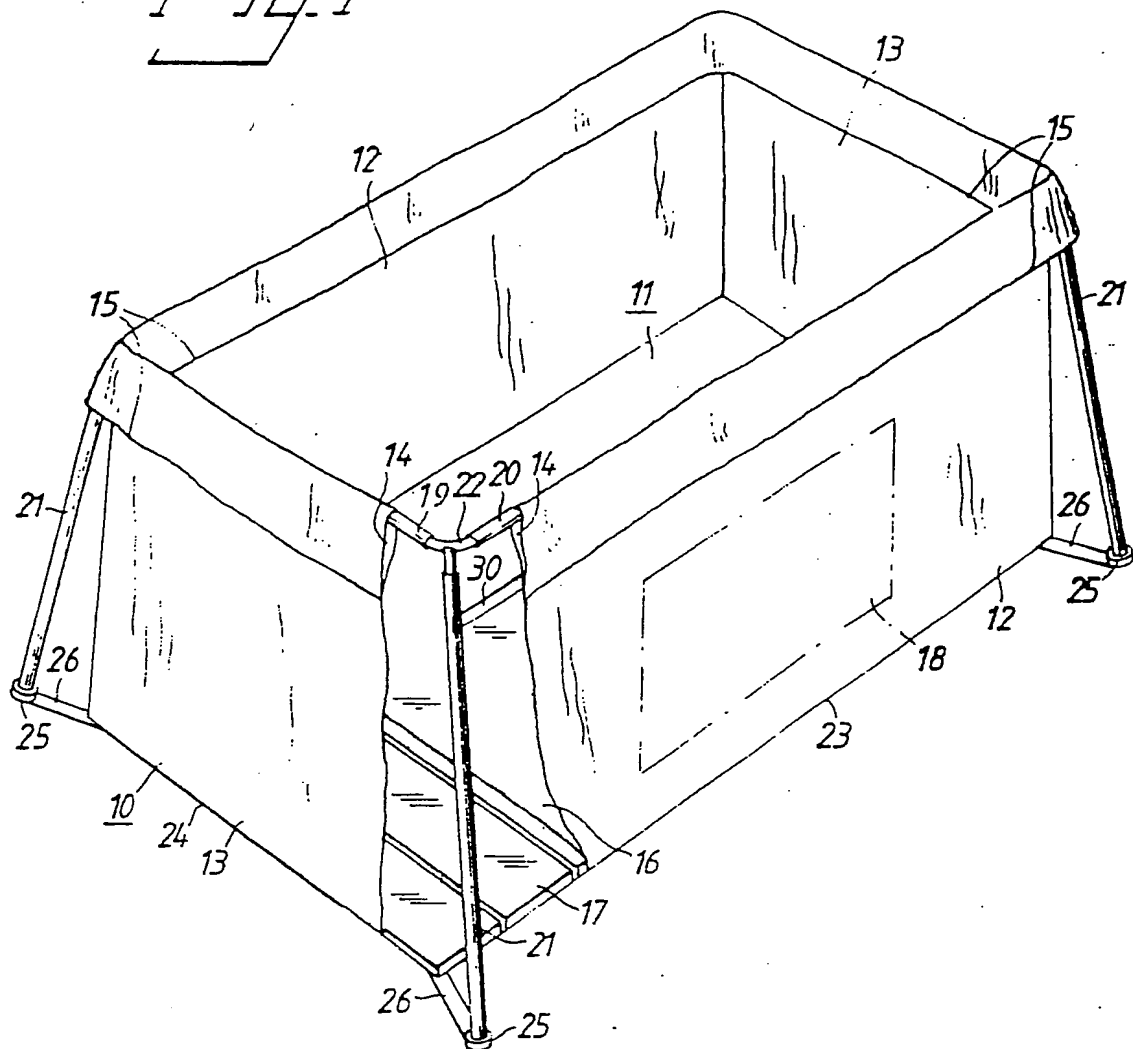


Fig. 2

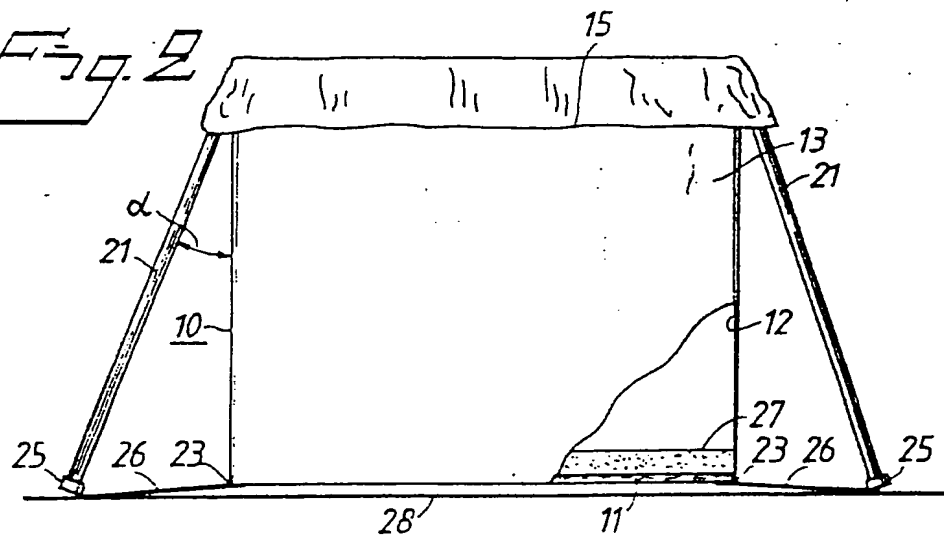


Fig. 3

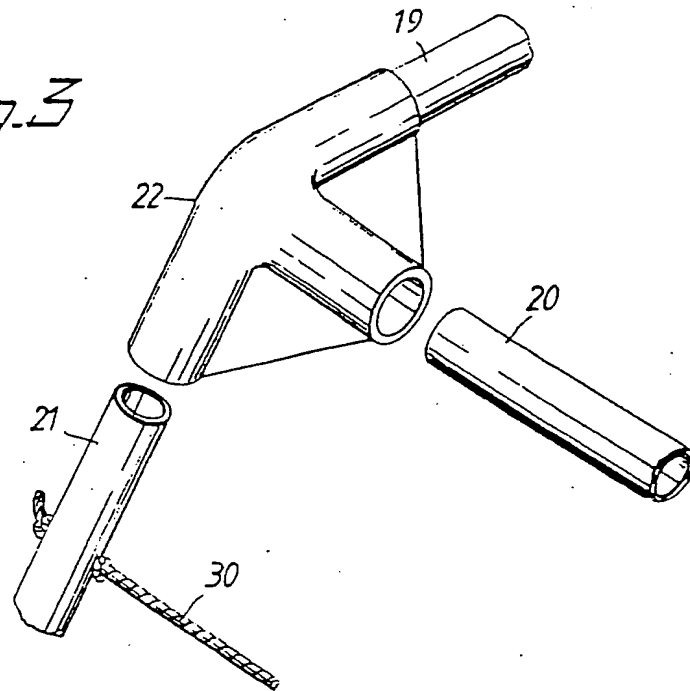


Fig. 4

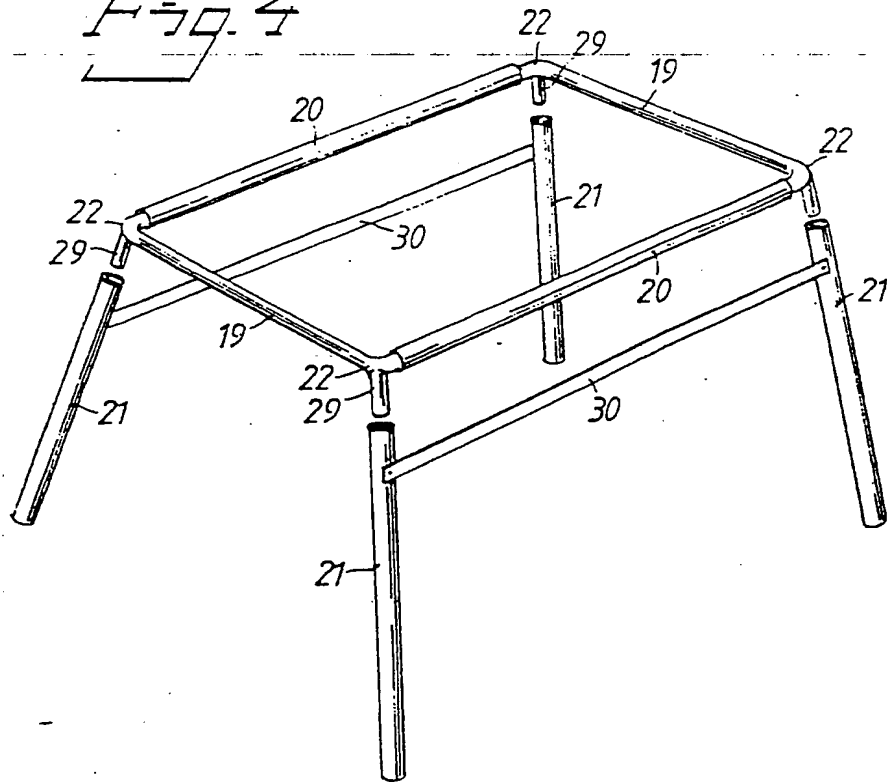


Fig. 5

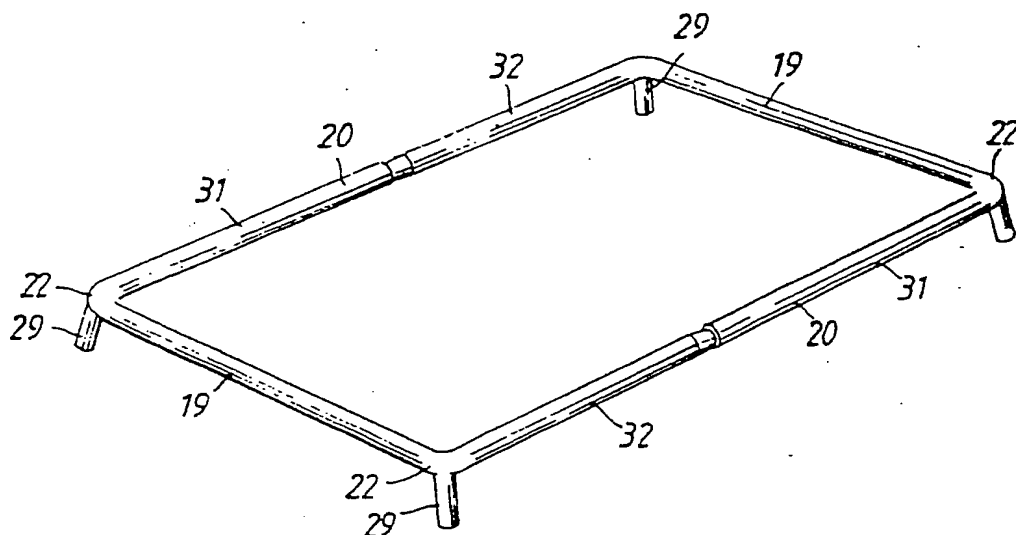
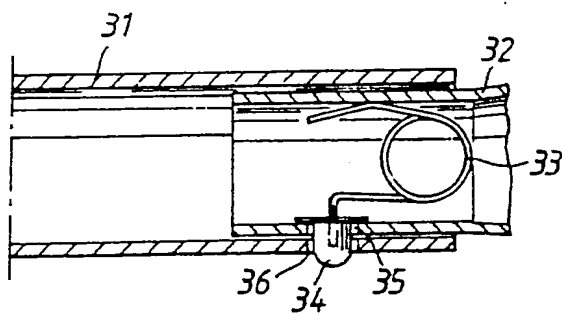


Fig. 6



INTERNATIONAL SEARCH REPORT

International Application No PCT/SE 91/00520

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ⁶ According to International Patent Classification (IPC) or to both National Classification and IPC IPC5: A 47 D														
II. FIELDS SEARCHED <div style="text-align: center; border: 1px solid black; padding: 2px;">Minimum Documentation Searched⁷</div> <table style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 25%; border: 1px solid black; padding: 2px;">Classification System</th> <th style="border: 1px solid black; padding: 2px;">Classification Symbols</th> </tr> <tr> <td style="border: 1px solid black; padding: 5px; vertical-align: top;">IPC5</td> <td style="border: 1px solid black; padding: 5px; vertical-align: top;">A 47 D 7/00</td> </tr> </table> <div style="text-align: center; border: 1px solid black; padding: 2px;">Documentation Searched other than Minimum Documentation to the extent that such Documents are Included in Fields Searched⁸</div> <p style="padding: 5px;">SE,DK,FI,NO classes as above</p>			Classification System	Classification Symbols	IPC5	A 47 D 7/00								
Classification System	Classification Symbols													
IPC5	A 47 D 7/00													
III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹ <table style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 10%; border: 1px solid black; padding: 2px;">Category[*]</th> <th style="border: 1px solid black; padding: 2px;">Citation of Document,¹¹ with indication, where appropriate, of the relevant passages¹²</th> <th style="width: 10%; border: 1px solid black; padding: 2px;">Relevant to Claim No.¹³</th> </tr> <tr> <td style="border: 1px solid black; text-align: center; vertical-align: top;">A</td> <td style="border: 1px solid black; padding: 5px;">US, A, 3763506 (SZEGO) 9 October 1973, see figure 3 --</td> <td style="border: 1px solid black; text-align: center; vertical-align: top;">1-11</td> </tr> <tr> <td style="border: 1px solid black; text-align: center; vertical-align: top;">A</td> <td style="border: 1px solid black; padding: 5px;">DE, C, 481037 (FRITZ EISER) 12 August 1929, see figures 1,2 --</td> <td style="border: 1px solid black; text-align: center; vertical-align: top;">1-11</td> </tr> <tr> <td style="border: 1px solid black; text-align: center; vertical-align: top;">A</td> <td style="border: 1px solid black; padding: 5px;">US, A, 4819284 (BROWN) 11 April 1989, see the whole document -- -----</td> <td style="border: 1px solid black; text-align: center; vertical-align: top;">1-11</td> </tr> </table>			Category [*]	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³	A	US, A, 3763506 (SZEGO) 9 October 1973, see figure 3 --	1-11	A	DE, C, 481037 (FRITZ EISER) 12 August 1929, see figures 1,2 --	1-11	A	US, A, 4819284 (BROWN) 11 April 1989, see the whole document -- -----	1-11
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A	US, A, 4819284 (BROWN) 11 April 1989, see the whole document -- -----	1-11												
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>[*] Special categories of cited documents: ¹⁰</p> <p>^{"A"} document defining the general state of the art which is not considered to be of particular relevance</p> <p>^{"E"} earlier document but published on or after the international filing date</p> <p>^{"L"} document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>^{"O"} document referring to an oral disclosure, use, exhibition or other means</p> <p>^{"P"} document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="width: 45%;"> <p>^{"T"} later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>^{"X"} document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>^{"Y"} document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>^{"&"} document member of the same patent family</p> </div> </div>														
IV. CERTIFICATION <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border: 1px solid black; padding: 5px;"> Date of the Actual Completion of the International Search 5th November 1991 </td> <td style="width: 50%; border: 1px solid black; padding: 5px;"> Date of Mailing of this International Search Report 1991 -11- 0 8 </td> </tr> <tr> <td style="border: 1px solid black; padding: 5px;"> International Searching Authority <div style="text-align: center; padding-top: 10px;"> SWEDISH PATENT OFFICE </div> </td> <td style="border: 1px solid black; padding: 5px;"> Signature of Authorized Officer <div style="text-align: center; padding-top: 10px;"> Jan Nilsson </div> </td> </tr> </table>			Date of the Actual Completion of the International Search 5th November 1991	Date of Mailing of this International Search Report 1991 -11- 0 8	International Searching Authority <div style="text-align: center; padding-top: 10px;"> SWEDISH PATENT OFFICE </div>	Signature of Authorized Officer <div style="text-align: center; padding-top: 10px;"> Jan Nilsson </div>								
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International Searching Authority <div style="text-align: center; padding-top: 10px;"> SWEDISH PATENT OFFICE </div>	Signature of Authorized Officer <div style="text-align: center; padding-top: 10px;"> Jan Nilsson </div>													

ANNEX TO THE INTERNATIONAL SEARCH REPORT
ON INTERNATIONAL PATENT APPLICATION NO. PCT/SE 91/00520

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report.
The members are as contained in the Swedish Patent Office EDP file on 91-09-27
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US-A- 3763506	73-10-09	CA-A- 916543	72-12-12
DE-C- 481037	29-08-12	NONE	
US-A- 4819284	89-04-11	NONE	

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